

COMPONENTS

FAQ

Q What are the fabrication processes, such as 90nm, that you often mention?

A The fabrication process dictates how small an integrated circuit can be made. The figure refers to the wavelength of the light source that's used to cure the photoresistive coating on the silicon wafer. The shorter the wavelength, the smaller the etched lines and transistors on the wafer, allowing for more transistors per given area. Intel is currently leading the field with its 65nm process, but 90nm is more common.

Reducing the fabrication process means smaller circuits – which generate less heat and require less power – can be created. This means higher clock speeds can be applied, giving better performance.

When you consider that a human hair is 8,000nm in diameter, you can imagine just how small a transistor is on a Pentium 4 processor.

David Ludlow
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FOXCONN RC4107MA-RS2

★★★★

£54 inc VAT

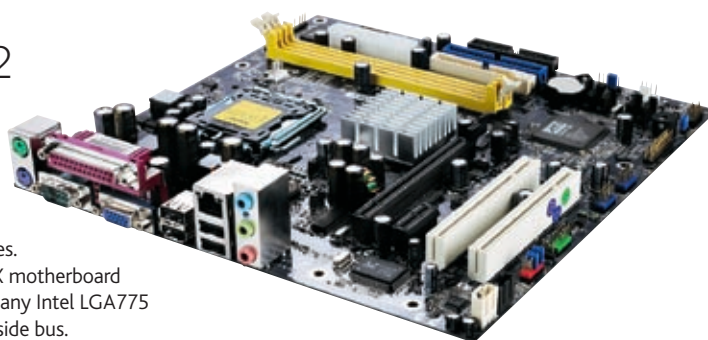
Onboard graphics provide a cheap and easy way of building a PC if you're not interested in playing games. Foxconn's RC4107MA-RS2 microATX motherboard lets you do that in a small case with any Intel LGA775 processor that has an 800MHz frontside bus.

While most motherboards with onboard graphics use Nvidia or Intel chips, Foxconn has opted for ATI's Radeon Xpress 200 with integrated X300-based graphics. It provides a single analogue output for connecting a monitor.

As you'd expect from an integrated graphics chipset, the 3D performance isn't very good and it failed our Doom 3 test. Dropping the resolution to 640x480 speeded things up, but it still juddered on certain scenes of our test. A lot of this is down to the X300's four pixel pipelines and the fact that it has to share system memory.

Fortunately, there's a PCI-E x16 slot, so you can install a dedicated graphics card if you decide you want to play games at a later date. As you can see from our Doom 3 test results using a PowerColor 7800 GT, this motherboard lagged slightly behind our reference PC by a couple of frames.

Performance from standard Windows applications also wasn't what we were hoping for. The board scored higher than our reference PC, mostly due to the 3.6GHz Pentium 4 processor we use for testing, but it scored 22 points fewer in our *Shopper* benchmark than Gigabyte's GA-G1975X, which we reviewed last month. It's a cheaper board, though, and the performance on offer is adequate for any mainstream application.



As the RC4107MA-RS2 is a microATX motherboard, there's little room for expansion. There are only two DDR2 memory slots with a single memory channel. This means you don't get the performance boost when installing two sticks of memory that you'd get with two memory channels. This partly explains the performance gap between this and the GA-G1975X.

The back panel is quite bare, with four USB2 ports, 5.1 sound and PS/2 keyboard and mouse connectors. The motherboard has two USB2 and one FireWire header, so you can add extra ports if you wish. You'll have to buy these separately, as Foxconn doesn't provide any in the box.

There's an onboard LAN port, but this is only

10/100Mbit/s and not the faster Gigabit Ethernet. Given the lack of products out there that support Gigabit Ethernet, this is unlikely to worry you.

Storage is catered for by four SATA ports, which support RAID for faster hard disk access or data protection. If you want to install expansion cards, the two PCI and single PCI-E x1 slot, should cater for most needs.

If you're planning to build a small PC the RC4107MA-RS2 is a good, if unexceptional, choice of motherboard. But if you want a bit more expansion potential and performance, we'd choose an Nvidia nForce4-based board instead.

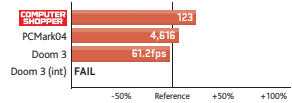
David Ludlow

SUMMARY

- ✓ Small
- ✗ Only a single memory channel
- ✗ Unimpressive performance

MOTHERBOARD ATI Radeon Xpress 200 chipset, supports Intel LGA775 processors, two PCI, one PCI-E x1, one PCI-E x16, two DIMM slots, 10/100 LAN, four SATA, four USB2
PART CODE RC4107MA-RS2
SUPPLIER www.scan.co.uk
DETAILS www.foxconnchannel.com

PERFORMANCE (see page 60)



Also consider...

INTEL Pentium 4 640

★★★★★

£141 inc VAT

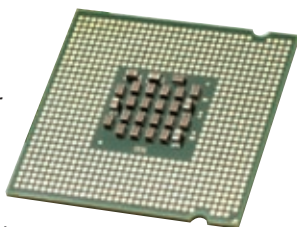


BEST BUY Intel's Pentium 4 640 processor supports 64-bit instructions and has a massive 2MB of level 1 cache.

Combined with a clock speed of 3.2GHz, this adds up to a high-performance chip that'll cope with any application. It did well in our benchmarks and is good value, too.

PROCESSOR 3.2GHz processor, LGA775, 200MHz external bus, 16KB L2 cache, 2,048KB L1 cache PART CODE BX80547PG3200F
SUPPLIER www.savastore.com DETAILS www.intel.com

✓ Fast 64-bit instructions ✗ You may not need 64-bit application support FULL REVIEW Jan 2006



AMD Athlon 64 3200+

★★★★★

£109 inc VAT



BEST BUY AMD's Athlon 64 3200+ is a powerful and relatively cheap 64-bit processor, which did well in all our benchmarks. It should appeal to overclockers in particular, because AMD processors are easy to tweak. The Athlon 64 3200+ is also an excellent choice for games and should help your PC muster a few more frames per second.

PROCESSOR 2GHz processor, Socket 939, 200MHz external bus, 128KB L2 cache, 512KB L1 cache PART CODE ADA3200BPBOX
SUPPLIER www.savastore.com DETAILS www.amd.com

✓ Powerful, easy to overclock ✗ Not as fast as Pentium 4 chips for video encoding FULL REVIEW Jan 2006



LEADTEK 7900 GTX Extreme

★★★★

£435 inc VAT

LEADTEK 7900 GT Extreme

★★★★★

£282 inc VAT

In last month's *What's New*, ATI's Radeon X1900 series of graphics cards stormed through our performance tests, giving Nvidia's cards a thrashing. This month, it's Nvidia's turn, with its 7900 series. We looked at Leadtek's 7900 GTX Extreme and 7900 GT Extreme.

ATI's X1900 range was a complete overhaul and redesign of its existing range, but Nvidia's approach isn't so radical. The 7900 range is the same as the 7800 range, but with faster clock speeds. This has been achieved by changing the fabrication to a 90nm process, which makes the graphics chips smaller and cooler, enabling them to be clocked higher.

Leadtek has gone one step further with its cards by overclocking the reference designs. The 7900 GTX Extreme has 24 pixel pipelines, a core running at 675MHz (up from 650MHz on the reference design) and 512MB of GDDR3 RAM running at 1.66GHz (up from 1.6GHz). The 7800 GT Extreme also has 24 pixel pipelines, a core running at 520MHz (up from 450MHz on the reference design) and 256MB of GDDR3 RAM running at 1.43GHz (up from 1.32GHz).

While these speed increases mean both cards are very fast, they lag behind ATI's 48-pixel pipeline X1900 XT, which is the lowest model from the new range with the X1900 XT at the top. The 7900 series only manages to outperform ATI's cards in our Doom 3 test, and that's because Nvidia's cards have better OpenGL drivers. Switch to Direct3D, which is

more commonly used in games, and the ATI chips open up a clear lead. While the 7900 GTX Extreme managed 53.0fps in Splinter Cell, the X1900 XT managed 59.8fps.

Don't forget Leadtek has overclocked its cards, so the reference 7900 designs will be slightly slower. X1900 XT is also cheaper at £385 including VAT, so does this mean game over for Nvidia? We don't think so. First of all, the 7900GT Extreme is a very good card and £100 cheaper than ATI's Radeon X1900 XT. It doesn't have the same levels of performance, but any card that can pump out 27.7fps in Call of Duty 2 at a resolution of 1,600x1,200 is far from poor. In this respect, the 7900 GT is an excellent card.

While ATI may have captured the performance at the high end, its multi-card

offering, CrossFire, is still not very popular. You need to buy a special master card to get it working. Nvidia's SLI, on the other hand, has been around for ages, is readily available and is much easier to use, as all Nvidia's cards are SLI-ready. This makes Nvidia's graphics cards attractive to anyone with an SLI motherboard.

If you happen to have a CrossFire motherboard or are just looking for the fastest single card you can find, the X1900 XT and X1900 GTX are the cards to buy. ATI's cards are faster at high resolutions and quality settings, and they are cheaper. But those looking to spend under £300 should opt for Leadtek's 7900 GT Extreme, which is still quick enough to play all current games at a resolution of 1,600x1,200.

David Ludlow

▼ Leadtek 7900
GTX Extreme

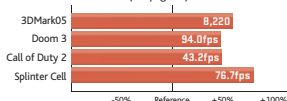


SUMMARY

- ✓ Quick
- ✗ Lags behind the X1900 series
- ✗ Expensive

GRAPHICS CARD Nvidia 7900 GTX graphics, PCI-E x16 interface, 675MHz core, 512MB GDDR3 RAM running at 880MHz (1.66GHz effective), two DVI interfaces, TV out
PART CODE W020083
SUPPLIER www.overclockers.co.uk
DETAILS www.leadtek.co.uk

PERFORMANCE (see page 60)



▼ Leadtek 7900
GT Extreme

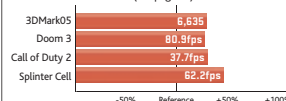


SUMMARY

- ✓ Runs at 1,600x1,200 resolution
- ✓ Cheaper than other high-end cards
- ✗ Still quite expensive

GRAPHICS CARD Nvidia 7900 GT graphics, PCI-E x16 interface, 520MHz core, 256MB GDDR3 RAM running at 715MHz (1.43GHz effective), two DVI interfaces, TV out
PART CODE W02G0084
SUPPLIER www.overclockers.co.uk
DETAILS www.leadtek.co.uk

PERFORMANCE (see page 60)



ANTEC P150

★★★★★

£102 inc VAT



Antec's iPod-white steel P150 case looks great on the desk and is built to keep your PC silent. It doesn't rattle, it has acoustic insulation and the hard disks screw into rubber grommets to prevent vibrations echoing through the P150. A silent Antec Neo HE 430W modular power supply is also included, all of which makes this case excellent value.



SILENT PC CASE ATX case, 120mm fan, two USB2, one FireWire, two audio ports, two 5¼" drive bays, one external 3½" drive bay, four internal 3½" drive bays PART CODE 0761345-019151-0 SUPPLIER www.morecomputers.com
DETAILS www.antec.com ✓ Attractive; comes with power supply ✗ Drive bays hard to access FULL REVIEW Mar 2006

ATI All-in-Wonder X1900

★★★★★

£289 inc VAT



Based on ATI's new graphics chip, this is a fast card that cut through our intensive Call of Duty 2 test at 25.5fps. It's excellent for entertainment, with a remote control and hybrid analogue/digital TV tuner. ATI's TV software works well, but doesn't support Freeview's EPG.

GRAPHICS CARD ATI Radeon X1900 Graphics, PCI-E x16 interface, 500MHz core, 256MB GDDR3 RAM running at 480MHz (960MHz effective), DVI interface, hybrid analogue/digital TV tuner, FM radio, SCART, S-video, component and composite, remote control PART CODE 100-714800 SUPPLIER www.vgastore.com DETAILS www.ati.com
✓ Excellent performance and software bundle ✗ No Freeview EPG FULL REVIEW May 2006

ECS KN1 SLI Extreme

★★★★★

£77 inc VAT



ECS's KN1 SLI Extreme motherboard uses



Nvidia's nForce 4 SLI chipset, so you can use two graphics cards together. It also supports all Socket 939 Athlon 64 processors, so it's an ideal basis for a powerful computer.

Performance is excellent, and the motherboard has every port you could possibly want. For the price, this is excellent value.

MOTHERBOARD nForce 4 SLI chipset, supports AMD Socket 939 processors, three PCI, one PCI-E x16, one PCI-E x1, four DIMM slots, two Gigabit Ethernet, ECS Top Hat Flash, three IDE, six SATA2, four USB2, FireWire PART CODE KN1 SLI SUPPLIER www.pcnextday.co.uk DETAILS www.ecs.uk.com
✓ Fast; lots of connectors ✗ SLI mode blocks access to PCI-E x1 slot FULL REVIEW Nov 2005